AMENDMENTS TO THE CLAIMS:

Please amend the claims as follows. This listing of claims will replace all prior versions, and listings, of claims in the application:

Claim 1 (Currently Amended): A back illuminated photodiode array comprising:

a first conductive type semiconductor substrate having a light-incident surface and an opposite surface with a plurality of recessed portions located opposite said light-incident surface; and

a plurality of spatially separated second conductive type semiconductor regions, wherein one of said second conductive type regions is located at each bottom of said recessed portions;

wherein said second conductive type semiconductor regions each individually constitute a pn junction together with said first conductive type semiconductor substrate, ~~and~~

wherein said first conductive type semiconductor substrate is thinner in said recessed portions of said first conductive type substrate than in portions of said first conductive type semiconductor substrate located around said recessed portions, and

wherein each of said recessed portions of said first conductive type semiconductor substrate is surrounded by portions of said first conductive type semiconductor substrate that form a frame part, located between a plurality of said recessed portions, which is thicker than and frames the respective recessed portion.

Claim 2 (Cancelled)

Claim 3 (Previously Presented): A back illuminated photodiode array according to claim 1,

wherein said first conductive type semiconductor substrate is composed of a single semiconductor substrate.

Claim 4 (Previously Presented): A back illuminated photodiode array according to claim 1,

wherein said first conductive type semiconductor substrate comprises a first semiconductor substrate including said light-incident surface and a second semiconductor substrate bonded to said first semiconductor substrate and including side walls of said recessed portions.

Claim 5 (Original): A back illuminated photodiode array according to claim 4, further comprising an etching stop layer existing between said first semiconductor substrate and said second semiconductor substrate and having resistance to a specific etching agent to be used for said second semiconductor substrate.

Claim 6 (Original): A back illuminated photodiode array according to claim 4, further comprising an insulation layer existing between said first semiconductor substrate and said second semiconductor substrate.

Claim 7 (Currently Amended): A back illuminated photodiode array according to claim ~~2~~ 1, comprising a plurality of electrode pads each formed on a top surface of each said frame part

and individually and electrically connected to each said second conductive type semiconductor region, respectively.

Claim 8 (Previously Presented): A back illuminated photodiode array according to claim 7, further comprising:

an electric insulation layer formed on each said frame part; and

a conductive member formed on said electric insulation layer and electrically connecting said second conductive type semiconductor regions with said electrode pads.

Claim 9 (Previously Presented): A back illuminated photodiode array according to claim 8, wherein said electric insulation layer is provided with a contact hole for connecting an end of said conductive member to said second conductive type semiconductor regions.

Claim 10 (Currently Amended): A back illuminated photodiode array according to claim ~~2~~ 1, wherein each said second conductive type semiconductor region extends from the bottom of the respective recessed portion at which it is located to side surfaces of said respective recessed portion.

Claim 11 (Currently Amended): A back illuminated photodiode array according to claim ~~2~~ 1, wherein each said second conductive type semiconductor regions extend from the bottom of the respective recessed portion at which it is located over side surfaces of said respective recessed portion to a top surface of the respective frame part framing said respective recessed portion.

Claim 12 (Previously Presented): A back illuminated photodiode array according to claim 11, comprising:

an electric insulation layer formed on each said frame part and having a contact hole opposing the top surface of each said frame part; and

electrode pads electrically connected to said second conductive type semiconductor regions through each said contact hole.

Claim 13 (Currently Amended): A back illuminated photodiode array according to claim ~~2~~ 1, wherein each said frame part comprises a first conductive type separation region having a higher impurity concentration than said first conductive type semiconductor substrate.

Claim 14 (Original): A back illuminated photodiode array according to claim 1 wherein an opening size of said recessed portions decreases with an increase in the depth of said recessed portions.

Claim 15 (Previously Presented): A back illuminated photodiode array according to claim 1, wherein said light-incident surface side of said first conductive type semiconductor substrate is provided with a first conductive type accumulation layer having a higher impurity concentration than said first conductive type semiconductor substrate.

Claim 16 (Original): A back illuminated photodiode array according to claim 4, wherein mutually opposing surfaces of said first semiconductor substrate and said second semiconductor substrate are different in their crystal plane orientation.

Claim 17 (Withdrawn): A semiconductor device, comprising:

a back illuminated photodiode array according to claim 7; and

a wiring board supporting said back illuminated photodiode array,

wherein said wiring board is electrically connected to said back illuminated photodiode array through said electrode pads.

Claim 18 (Withdrawn): A semiconductor device according to claim 17, comprising a scintillator placed on said light-incident surface of said semiconductor substrate.

Claim 19 (Withdrawn): A semiconductor device according to claim 17, wherein resin or air is filled in a space between said wiring board and said opposite surface of said semiconductor substrate.

Claim 20 (Withdrawn): A manufacturing method for the back illuminated photodiode array according to claim 4, said manufacturing method comprising a step of bonding said second semiconductor substrate to said first semiconductor substrate.

Claim 21 (Withdrawn): A manufacturing method for the back illuminated photodiode array according to claim 20, the manufacturing method comprising a recessed portion forming

step of forming a recessed portion by etching for forming a recessed portion corresponding region on said opposite surface of said second semiconductor substrate.

Claim 22 (Withdrawn): A manufacturing method for the back illuminated photodiode array according to claim 21, wherein the etching at said recessed portion forming step is carried out until an etching stop layer or an insulation layer existing between said first semiconductor substrate and said second semiconductor substrate is exposed.

Claim 23 (Withdrawn): A manufacturing method for the back illuminated photodiode array according to claim 21, wherein mutually opposing surfaces of said first semiconductor substrate and said second semiconductor substrate are different in their crystal plane orientation and the etching at said recessed portion forming step is carried out until at least the opposite surface of said first semiconductor substrate is exposed.

Claim 24 (Withdrawn): A manufacturing method for the back illuminated photodiode array according to claim 21,

wherein a step for forming said semiconductor region is provided with either

a post addition step in which, after said recessed portion forming step, impurities are doped to the bottoms of said recessed portions to form said semiconductor regions or

a previous addition step in which, before said recessed portion forming step, impurities are previously doped to the opposite surface of said first semiconductor substrate.

Claim 25 (Withdrawn): A manufacturing method for the back illuminated photodiode array according to claim 15, further comprising

a step for forming said accumulation layer higher in impurity concentration than said semiconductor substrate on said light-incident surface side.